

CLAIMS

1. A system for contacting a vehicle occupant during sudden deceleration of the vehicle, the system comprising:
 - a contact surface for interacting with the vehicle occupant;
 - a fixed energy absorption device attached to a structural member of the vehicle;
 - a deployable energy absorption device in contact with the contact surface and the fixed energy absorption device; and
 - an energy absorption modifier in communication with the fixed energy absorption device for varying the energy absorption characteristics of the fixed energy absorption device.
2. The system of claim 1 wherein contact surface includes a deformable foam layer.
3. The system of claim 1 wherein the fixed energy absorption device is a deformable metal bracket.
4. The system of claim 3 wherein the deformable metal bracket is a U-shaped bracket.
5. The system of claim 1 wherein the deployable energy absorption device is an inflatable airbag.

6. The system of claim 1 wherein the energy absorption modifier is a pyrotechnic device.

7. The system of claim 1 wherein the energy absorption modifier is a pyrotechnic bolt that disconnects the fixed energy absorption device from the structural member of the vehicle.

8. The system of claim 1 further comprising a frangible structural member connected at a first end to the contact surface and at a second end to the structural member of the vehicle.

9. A system for contacting a vehicle occupant during sudden deceleration of the vehicle, the system comprising:

a contact surface for interacting with a vehicle occupant;

a fixed energy absorption device attached to a structural member of the vehicle;

a frangible structural member connected at a first end to the contact surface and at a second end to the structural member of the vehicle;

a deployable energy absorption device in contact with the contact surface and the fixed energy absorption device; and

an energy absorption modifier in communication with the frangible structural member for varying the energy absorption characteristics of the frangible structural member.

10. The system of claim 9 wherein contact surface includes a deformable foam layer.

11. The system of claim 9 wherein the fixed energy absorption device is a deformable metal bracket.

12. The system of claim 11 wherein the deformable metal bracket is a U-shaped bracket.

13. The system of claim 9 wherein the deployable energy absorption device is an inflatable airbag.

14. The system of claim 9 wherein the energy absorption modifier is a pyrotechnic device.

15. The system of claim 9 wherein the energy absorption modifier is a pyrotechnic bolt that disconnects the fixed energy absorption device from the structural member of the vehicle.